

REMARKS

The Applicants thank the Examiner for the allowance of claims 20, 21, 41 – 51, 59 – 66, 79 – 96, 100, 102, 104, 106, 108, 109, 110, and 112.

Claim Objections

Claims 38-40 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from non elected claims. Claims 38 – 40 have been cancelled.

Claim Rejections – 35 U.S.C. § 112

The Examiner has rejected claim 13 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Claim 13 has been amended to particularly point out and distinctly claim the subject matter that the applicants regard as the invention.

Claim Rejections – 35 U.S.C. § 103

Claims 1-14 are rejected under 35 USC 103(a) as being unpatentable over Liu et al. (U.S. Patent No. 4,817,652) in view of Schulz (U.S. Patent No. 5,637,151). Claims 15-19 and 22-23 are rejected under 35 USC 103(a) as being unpatentable over Liu et al. ('652) in view of Schulz ('151) as applied to claim 1 above, and further in view of Olesen et al. (U.S. Patent No. 5,996,595). The Applicant respectfully traverses. The cited references do not teach all of the Applicant's claimed elements. In particular, Liu in view of Schulz and further in view of Olesen does not teach the element of independent claim 1 of a chelating agent comprising EDDHA (ethylenediaminediorthohydroxyphenyl acetic acid) in a solution. In contrast, both Liu and Olesen fail to teach the use of a chelating agent in a solution at all, and Schulz merely teaches the use of EDTA or DEQUEST as the chelating agent in a cleaning solution. Therefore, the Applicant respectfully submits that independent claim 1 and claims 2 – 19 and 22 – 23, that depend upon and incorporate the limitations of claim 1, are not anticipated or rendered obvious by Liu in view of Schulz and further in view of Olesen.

Claim Rejections – 35 U.S.C. § 102

The Examiner has rejected claims 52-58 under 35 USC 102(b) as being anticipated by Cohen et al. (EP 0 860866A1). The Applicant respectfully traverses. Cohen does not teach all of the elements of the Applicant's claims, and in particular does not teach the element of independent claim 52 of "dissolving a gaseous oxidant comprising O₃ into said H₂O." In contrast, Cohen teaches dissolving oxygen (O₂) and not ozone (O₃) into degassed water. Therefore, the Applicant respectfully submits that independent claim 52 and claims 53, 56 – 58, that depend upon and incorporate the elements of claim 52, are not anticipated by Cohen. Claims 54 and 55 have been cancelled.

Claim Rejections – 35 U.S.C. § 103

The Examiner has rejected claims 67-73 and 75-78 under 35 USC 103(a) as being unpatentable over Applicant's prior art in view of Ramachandran (U.S. Patent No. 6,074,935). The Applicant respectfully traverses. The cited prior art does not anticipate or render obvious the applicant's claims, either individually or in combination. In particular, the Applicant's prior art and Ramachandran do not teach the elements of independent claim 67 of "placing said wafer in a single wafer cleaning tool, ...dispensing an HF solution on said wafer for between 2-3 seconds; and dispensing a cleaning solution on said wafer immediately after dispensing said HF solution to neutralize said HF solution." In contrast, the Applicant's prior art describes batch processing by either immersion or spray without describing the time for which wafers are treated with HF and when the cleaning solution is subsequently applied to the wafer. Also, Ramachandran fails to teach the use of a single wafer cleaning tool or to specify the length of the etching described in column 2 lines 43 – 54 by hydrofluoric acid before rinsing the wafer as described in column 2 lines 55 – 61. Additionally, the Applicant respectfully submits that dispensing an HF solution on the wafer for between 2-3 seconds and immediately dispensing a cleaning solution on the wafer immediately after dispensing the HF solution to neutralize the HF solution is not obvious in light of the Applicant's prior art and Ramachandran because the cited prior art does not describe the use of a single wafer cleaning

tool that is critical to precisely apply an HF solution to a wafer for only 2-3 seconds and to immediately dispense a cleaning solution in a precise manner onto the wafer to neutralize the HF solution and stop the etching. The batch processing described in the Applicant's prior art is too crude a method to allow for the precise application of an HF solution to a wafer for only 2-3 seconds and to then immediately dispense a cleaning solution on the wafer to neutralize the HF solution in a precise and effective manner. Therefore, the Applicant respectfully submits that independent claim 67 and claims 68 – 73 and 75 – 78, that depend upon and include the limitations of the independent claim, are not taught or rendered obvious by the Applicant's prior art in view of Ramachandran.

Claim Rejections – 35 U.S.C. § 102

The Examiner has rejected claim 97 under 35 USC 102(b) as being anticipated by applicant's prior art. Claim 97 has been cancelled.

Claim Rejections – 35 U.S.C. § 103

The Examiner has rejected claim 98 under 35 USC 103(a) as being unpatentable over Applicant's prior art, as applied to claim 97 above, and further in view of Liu et al. ('652). Claim 98 has been cancelled.

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

Date: 1/30 2004

Heather Molleur
Heather M. Molleur
Reg. No. 50,432

Patent Counsel
Legal Affairs Dept.
APPLIED MATERIALS, INC.
P.O. Box 450A
Santa Clara, CA 95052

Telephone inquiries to:
Heather M. Molleur
(408) 720-8300